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APPLICATION NO.	FILED DATE	INVENTOR NAME	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/751,526	12/29/2000	Venkatesan Murali	42560Pat309	8841

BY: /s/ [Signature] 2/2/03

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EXAMINER

KIANNI KAVHUC

ARTICLE PAPER NUMBER

2877

DATE MAILED 02/26/2003

Please find below and or attached an Office communication concerning this application or proceeding.

Application No.

Applicant(s)

09/751,516

MURALI VENKATESAN

Office Action Summary

Examiner

Art Unit

Kevin C Kianni

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If no period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED, 35 U.S.C. § 133.
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may require any earned patent term adjustment. See 37 CFR 1.714(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-8 and 10 is/are rejected.
- 7) ☐ Claim(s) 9 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on 07 February 2003 is: a) ☒ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO/Office)
- 2) ☐ Notice of Disputes in Patent Drawing Review (PTO/44)
- 3) ☐ Information Disclosure Statement(s) (PTO/44) (Paper No(s).)
- 4) ☐ Interview Summary (PTO/413) (Paper No(s).)
- 5) ☐ Notice of Informal Patent Application (PTO/415)
- 6) ☐ Other _____

DETAILED ACTION

Allowable Subject Matter

1. Claim 9 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 9 is allowable, since the prior art in combination with other limitations of the base claim does not teach a detector of electromagnetic radiation disposed at the end of said first substrate.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-2, 8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over combination of Adkins (US 6163233) and Kim et al. (US 6355198).

Regarding claim 1, Adkins teaches an apparatus (shown at least in figures 1 and 6) comprising:

a multi-level waveguide (shown at least in fig. 1; see abstract) comprising a first substrate 20 (col. 4, line 23) having a first opening therethrough (fig. 1, item 30; see col. 4, lines 61-64); a second substrate 22, attached to said first substrate 20, having a second opening therethrough 30 and aligned with the first opening in said first substrate

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(shown in fig. 1, item 30; see col. 4, lines 22 and 61-64); a first material disposed in said first substrate (see fig. 1, vias 30 in substrates 20 and 22 and col. 2, lines col. 5, lines 3-9), and a second material disposed in said second substrate hole (see fig. 1, vias 30 in substrates 20 and 22 and col. 2, lines col. 5, lines 3-9).

However, Adkins does not teach wherein the above underlined multilevel waveguide is optical and that the above underlined first/second material are optically transparent. Nevertheless, Adkins states that the substrate holes/vias are filled with a solid conductive material (see col. 2, lines 36-37). Kimm teaches forming optical waveguide that are formed in indents/capillary openings in substrate(s) shown in at least figures 1-4; see abstract, col. 9, lines 32-35 and col. 29, lines 11-42. Thus, Kimm provides a method of making patterned holes by modifying a surfaces chemically or other techniques for purpose of forming optical waveguides (see col. 4, lines 27-33). Thus, it would have been obvious to person of ordinary skill in the art when the invention was made to modify Adkins' waveguides 30 in each substrates 20/22, by filling them with Kim's optically transparent material/waveguide in order to produce an optical apparatus that includes the above limitations, since the resultant optical system would have waveguides having lower refractive indices that provides single-mode output in the visible and near infrared red regions (5198': see col. 29, lines 31-36).

Regarding claim 2, Adkins does not specifically teach wherein said transparent material is a gas. Nonetheless, inherently, the empty vias 30 contain air that contains gas such as oxygen and nitrogen. It is also conventional to insert specific gas to vias

for purpose of producing a light source, as in reference US 6194833, is provided herein as prior art.

Regarding claim 8, Adkins further teaches a source of electromagnetic radiation attached to said first substrate (see col. 6, lines 4-34).

Regarding claim 10, Adkins further teaches a conductive layer on said second substrate (see fig. 1, item 26).

4. Claims 3-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over combination of Adkins and Kim et al. and further in view of Carey et al. (US 5219787).

Regarding claims 3-7 the combination of Adkins and Kim teaches all limitations of claim 1. However, the combination does not teach wherein the said transparent material is cladding, grown on the inside of the substrate hole, it is comprised of an outer cladding and a separate inner transparent material, wherein transparent material is an optical fiber, wherein said first substrate is made of silicon, wherein said transparent material and said first substrate are made of a same material, a source of electromagnetic radiation attached to said first substrate, a detector of electromagnetic radiation attached to said second substrate. These limitations are taught by Carey. Carey teaches multiplayer substrate containing vias (shown at least in fig. 32; see abstract) wherein transparent material is an optical fiber (see fig. 32, item 158; see col. 61, line 61-col. 10, line 2; wherein cladding with a glass conductor is an optical fiber, also an optical waveguide containing cladding is an optical fiber, see col. 10, lines 14-

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25), wherein said first substrate is made of silicon (see col. 9, lines 6-18), wherein said transparent material and said first substrate are made of the same material (see figures 3 and 4, wherein the polyimide material 14 layer is same as the filled polyimide 24 in vias created in figurer 4). Thus, Carey provides flexibility in designing multi-level waveguides by altering the substrates materially or electronically and improving the over all system performance (col. 1, lines 50-59). Thus, it would have been it is obvious to a person of ordinary skill in the art when the invention was made to modify Adkins and Kim's combination's multi-level waveguide (shown in fig. 1) by combining Carey's teachings on optical materials in order to produce an optical system that includes the above limitations since the resultant device would improve the system performance such as for controlling impedance signal tracks at different substrates (col. 1, line 66- col. 2, line 4).

Response to Amendment

5. Applicant's arguments filed on February 7, 2003 have been fully considered but they are not persuasive.

This examiner has carefully reexamined claims 1-10 in view of applicant's amendments and arguments and thus the examiner has provided a combined second reference to overcome applicant's arguments/objections.

THIS ACTION IS MADE FINAL

10. This action in view of applicant's amendments are made FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened

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statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kaveh Cyrus Kianni whose telephone number is (703) 308-1216.

The examiner can normally be reached on Monday through Friday from 8:30 a.m. to 6:00 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor,

Frank Font, can be reached at (703) 308-4881.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(703) 308-7722. (for formal communications intended for entry)


or:

(703) 308-7721. (for informal or draft communications, please label
"PROPOSED" or "DRAFT")

Hand delivered responses should be brought to Crystal Plaza 4, 2021 South
Clark Place, Arlington, VA., Fourth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703) 308-0956.

Kevin Cyrus Kianni


Frank Font

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Patent Examiner
Group Art Unit 2877

Supervisory Patent Examiner
Group Art Unit 2877

February 12, 2003